

CLAIMS

We claim:

1. A process for the separation of acrylic acid in the gaseous effluent stream produced by the catalytic oxidation of propylene and/or acrolein said gaseous effluent, comprising acrylic acid water and some unreacted acrolein, the process comprises contacting:
 - a) propylene and/or acrolein with oxygen in the presence of an oxidation catalyst to form a gaseous effluent or stream of acrylic acid, water, unreacted acrolein and by-products;
 - b) contacting the gaseous stream in a quenching zone with liquid previously formed by condensation in such quenching zone to form an aqueous acrylic acid stream;
 - c) directing the acrylic acid containing stream from the quenching zone of step b) to a solvent extraction zone where it is contacted with ethyl propionate as the extractant to form an extract, and
 - d) forwarding the extract comprising primarily of acrylic acid and ethyl propionate solvent with some acetic acid and water to an azeotropic distillation zone where the extract is distilled to obtain an ethyl propionate/water azeotrope as overhead and a crude acrylic acid as a residue stream.
2. The process of Claim 1 wherein the gaseous effluent is produced from a two-stage catalytic oxidation process in the vapor phase.
3. The process of Claim 1 wherein acrylic acid is present in said gaseous effluent stream in an amount of about 10 to about 20 wt % based on the total weight of the stream.
4. The process of Claim 2 wherein acrolein is present as a portion of the product of the first stage oxidation in an amount no greater than about 1 wt % based on the weight of the acrylic acid present in the oxidation effluent.
5. The process of Claim 1 wherein the gaseous effluent is produced from a single stage oxidation process.
6. The process of Claim 1 wherein the acrylic acid containing stream of step (c) is contacted countercurrently with the ethyl propionate extraction solvent.
7. The process of Claim 6 wherein the extraction is conducted at a temperature of about 20°C to about 30°C.
8. The process of Claim 1 wherein the distillation of the extract of step (d) comprises condensing a vaporized azeotrope of water and ethyl propionate extraction solvent, and

separating into an organic and aqueous phase.

9. The process of Claim 8 wherein the organic phase is directed to an extraction tower.

10. The process of Claim 1 wherein the crude acrylic acid of step (d) is directed to a light ends tower separation zone.

11. The process of Claim 1 wherein the solvent: feed ratio of EP as extractant is about 0.70 - 1.00.

12. The process of Claim 11 wherein the ratio of EP as extractant is about 0.75 - 0.85.

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